

## Aesthetic septorhinoplasty in the burned nose

Farhad Hafezi\*, Hamid Karimi, Amirhosein Nouhi

*Department of Plastic Surgery, Motahary Burn and Reconstructive centre,  
Iran University of Medical Sciences, Tehran, Iran*

Accepted 12 July 2004

### Abstract

Patients who have survived thermal injuries to the face suffer severe disfigurement from the devastating deformities of full-thickness facial burns. The nose is the prominent central organ of the face, which has crucial effect on Aesthetic appearance. The plastic surgeon's role to deal with such cases is to undertake procedures to produce a more pleasant look although the target organ could be the non-burned areas of the face. It is a common belief that surgical intervention under the scarred or grafted nose is risky and may result in skin or covering graft necrosis. For this reason, plastic surgeons are cautious and hesitate to perform Aesthetic surgery on burn scarred tissue.

We present 13 cases, 10 women and three men with complete or subtotal nasal burn. Classic Aesthetic Rhinoplasty operations were performed to create a better appearance and correct any internal or external deviations. These procedures are carried out under severely burned skins, or previously grafted and reconstructed noses. Cases were followed for about a one-year period. There was no necrosis in any part of skin after surgery. We believe that Aesthetic rhinoplasty can be done safely in these victims with pleasing outcome.

The problems that we encountered in these cases were irregularities of burned alar margins, multiple operations and intractable nasal deviation in severe cases.

© 2004 Elsevier Ltd and ISBI. All rights reserved.

*Keyword:* Burn-nose-graft-rhinoplasty

### 1. Introduction

The nose is the central part of the face and is frequently injured in different kinds of trauma [1]. This organ is particularly exposed to facial burn accidents due to its situation and is usually accompanied with deformities of other organs of the face; so, its structure, shape and essential functions may also be severely impaired due to these changes. We report the use of a classical technique rhinoplasty to correct problems based on the assumption that performing Aesthetic surgery is crucial in rehabilitating socially and psychologically victims of burns injury to the face. Burn may cause some deformities and stenosis in the internal valve, although some authors have shown that the nasal mucosa is resistant to damage when the face is burned [3]. The Middle Eastern nose usually has a prominent hump and plunging tip. This type of nose especially in a young woman would cause a non-

feminine look, which can be corrected, resulting in more pleasant appearance. For these reasons, rhinoplasty is the most frequently performed cosmetic surgery in this country. The correction of the osseo-cartilaginous framework and producing a more pleasant nose even if the nose itself is not involved in burn injury gives great satisfaction to these patients and heightens their self-confidence by improving their self-image. In a 25 year, literature review (1978–2003), we could find no report of doing Aesthetic rhinoplasty on the burned nose except for Bichet et al. [4] who have reported rhinoplasty in acute burn for better skin coverage.

### 2. Materials and methods

This article is based on the surgical work we carried out at the Motahary Burn and Reconstructive Hospital, a university-affiliated center. Patients with acute and chronic burn trauma are transferred from all over the country to this 100-bed referral center.

\* Corresponding author. Tel.: +98 21 225 0623; fax: +98 21 227 3233.  
E-mail address: info@drhafezi.com (F. Hafezi).

Table 1  
Patients summary

Cases	Age/sex	Covering skin	Follow up (months)	Previous nasal operations	Burn aetiology
1	33/F	Graft	13	Skin graft	Scald
2	25/F	Scar	10	No	Scald
3	28/M	Scar	10	No	Scald
4	18/M	Graft	14	T.N.R. <sup>a</sup>	Flame
5	25/M	Graft	12	Skin graft	Scald
6	25/F	Graft	10	T.N.R.	Scald
7	17/F	Segmental graft	10	Skin graft	Scald
8	40/F	Graft	14	T.N.R.	Acid
9	35/F	Scar	10	No	Scald
10	16/F	Graft	12	Skin graft	Scald
11	28/F	Graft	4	T.N.R.	Flame
12	22/F	Graft	12	Skin graft	Flame
13	21/F	Graft	14	Skin graft	Flame

<sup>a</sup> T.N.R. = Total nasal reconstruction.

We present 13 cases, 10 women and three men with complete or subtotal nasal burn. The covering skin was either scarred or had been grafted with split thickness skin.

Burn injuries of the nose have been classified according to the extent of the deformity:

1. The most common type is the patient with minimal deforming defect and without major tissue loss.
2. The second type is the patient with nasal ectropion and scar over the nasal dorsum.
3. The third group have more extensive tissue loss.
4. The fourth group have obstruction and stenosis of nostrils.

According to the above classification, our patients were mostly categorized as class 2 or 3 and one in class 4.

We performed the classic rhinoplasty operation to create a better appearance and correct any internal or external deviations that could cause respiratory or Aesthetic problems due to shrinkage of soft tissues. Cases were followed for about a one-year period (10–14 months).

Standard four view photographs were taken before and after operation. Patients and surgeon satisfaction were asked

and recorded. All 13 cases were operated by a single plastic surgeon (first author).

### 3. Surgical technique

We think that waiting at least a year, for maturation of nasal skin scar (whether grafted or burned) will get more blood perfusion to this organ, on which a careful Aesthetic septorhinoplasty can be done safely.

Operative procedure was done under general endotracheal anaesthesia. About 10 ml of 1/200,000 solution of epinephrine was injected into the field.

Rhinoplasty operations were undertaken by closed technique in three and open for the rest of cases. Stepladder columella and marginal incisions were carried out and skin coverage of the nose was undermined with blunt tip small scissors (fomon). Great care is carried out to elevate the soft tissue over the skeleton with homogenous thickness and care should be taken not to thin out the covering skin at lateral and radix areas, which are responsible for blood supply to this compromised skin.

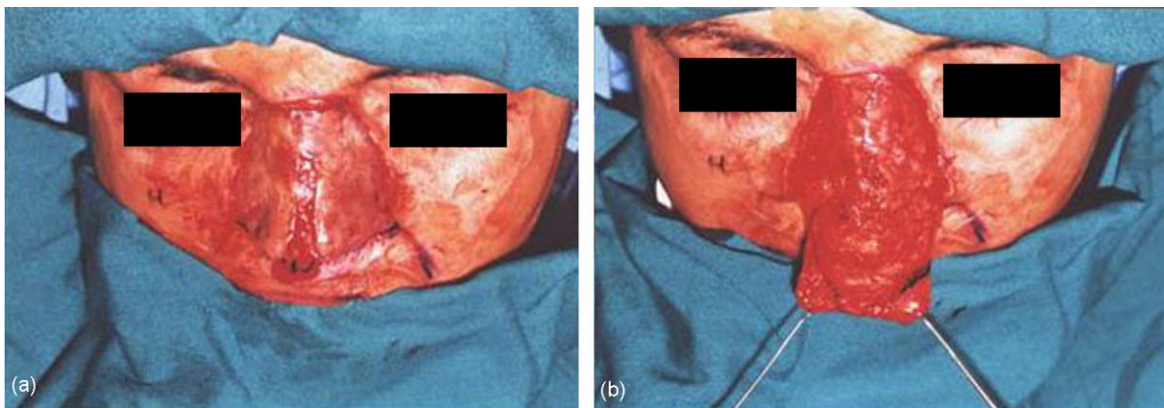


Fig. 1. (a and b) Intraoperative photos show technique of severe ectropion correction, by using the remaining nasal skin used as the nasal lining to be covered by skin graft [1].



Fig. 2. Case1, thirty-three-year-old female with history of scald burn of the face. Nose covered with skin graft previously. Pre and post operative photos.

Due to rigid and tight covering tissue, which is common in these cases, inside vision is limited so continuous palpation of the scissors tip with the surgeon's index finger is very helpful. Although in most cases the covering skin was either grafted or scarred, due to abundant vascularity of head and neck area, the undermining does not jeopardize the vascular supply and can be done safely if dissection is carried out right over the nasal osteocartilagenous skeleton. Staying at this plane is the key point of preserving the vascular supply of the overlying scarred soft tissue. Lower laterals trimming is followed by dorsal and caudal resection of the septum. By elevating the mucoperiosteum on the concave side of the septum, scoring the quadrilateral cartilage and resection of its posterior segment over the maxillary crest is done to compensate septal deviations if present. Hump resection and or rasping and lateral osteotomies were performed to complete the mobilization of nasal structures. No postoperative tamponade is used, but low-pressure taping and a thermoplastic splint is applied for

five days. Applying pressure dressing as used in classic rhinoplasty, inside and outside of the nose may jeopardise the blood supply of the skin.

Simultaneous skin graft was done in one case to correct severe external deviation due to shortage of covering tissue on one side of the nose.

It should be mentioned that all cases with ectropion of alar margins have been corrected in previous operations and Aesthetic rhinoplasty was done at least a year after primary reconstruction. Fig. 1(a and b) shows intraoperative photos of primary stage of nasal deformity correction, and Fig. 6 shows the recent and late photos of ectropin repair.

#### 4. Cases

Thirteen patients were operated, 10 women and three men whose noses had burn scar or has been grafted with split thickness skin (See Table 1, Figs. 1–8).



Fig. 3. Case 3, twenty-eight-year-old male with history of scald burn in childhood. Pre and post operative photos.





Fig. 4. Case4, eighteen-year-old male burned with flame about three years ago. Multiple operations done previously to reconstruct eyelids, eyebrows, forehead and lips. Right column, preoperative, middle, after total nasal reconstruction (T.N.R., Fig. 1) and left column, post rhinoplasty photos.

## 5. Discussion

The face is the most exposed part of the body, so in any public communications it is the first organ that can be evaluated by the opposing person. Burn injury has many disastrous consequences for the victim's appearance. These patients hesitated to attend social activities where other

people could see them, judge them, annoy them, and even tell them some words in sympathy [2].

The nose is the prominent central organ of the face, and has a crucial effect on Aesthetic appearance. The plastic surgeon is sometimes confronted with burned patients who demand Aesthetic rhinoplasty in addition to nasal reconstruction surgery for better appearance.



Fig. 5. Case7, seventeen-year-old female with history of scald burn in child hood. Previous scar excision and segmental graft were done in another center. Pre and post operative photos.



Fig. 6. Case11, twenty-eight-year-old female victim of flame burn in childhood. Right column, preoperative, middle, after total nasal reconstruction (T.N.R., Fig.1) and left column, post rhinoplasty photos.

In our experience, correcting the contracted skin is not sufficient procedure to make complete correction of the deformed nose. We have to repair the shortage of soft tissue and mobilize the nasal skeleton in one or two separate stages to have a better outcome. The problem in these cases is the rigid covering grafted or scarred skin, which is less pliable to take the form of the modified osteocartilaginous skeleton.

On the other hand, burn contraction can retract facial skin on each side of the nose and pull the soft tissue and nasal skeleton in either way [5].

These cases may have some growth and developmental dissymmetry even before burning happens. These problems will aggravate and become more visible and annoying after burn sequela happens. It is a common belief that surgical interventions under the scarred or grafted nose are risky and



Fig. 7. Case12, twenty-two-year-old female, a case of flame burn since early childhood. Above shows photos two years after nasal skin change by split thickness grafting, and post rhinoplasty photos, twelve months after operation.





Fig. 8. Case13, twenty-one-year-old female, a case of flame burn. Right column, preoperative, middle, five days after ectropion correction and left column, one year post rhinoplasty photos.

may result in skin or covering graft necrosis. For a long time, plastic surgeons were cautious and hesitated to perform surgery on burn scarred tissue. They had several reasons for not doing so. The most important ones were compromised vascularity of the burned skin and the possibility of slough of the scarred tissue. In the literature review, we could not find any report about performing Aesthetic rhinoplasty on the burned nose.

Face and nose soft tissues have high vascularity potentials and if a few months has elapsed after burn trauma, the tissue would regain some of its vascularity and careful surgical intervention such as rhinoplasty could be done more safely.

It seems logical that after one year, nasal skin (whether grafted or burned) becomes matured and will get more blood perfusion, on which a careful Aesthetic septorhinoplasty can be done safely.

## 6. Conclusion

The nose is most visible part of the face, which attracts the viewer on the first glance. The resulting deformities are immediately obvious to all who see the patient. In our country, these victims are mostly children or young females. As they grow up and develop awareness of their look, they become more and more obsessed about their social contacts. They prefer to stay home and lose their life opportunities of

becoming a happy and useful member of their society. The plastic surgeon's role to deal with such cases is to do any operation to produce a more pleasant look although the target organ could be the non-burned areas of the face.

Septorhinoplasty has been performed on scarred, reconstructed or skin grafted noses. There was no necrosis in any part of the skin after surgery. It should be noted that nasal skin flaps should be thick enough to prevent probable necrosis in distal part, and no skin thinning procedure should be done. The outcomes were satisfying to both patients and surgeons.

The problems we encountered in these cases were:

1. Intractable nasal deviation due to long standing scar contraction in one case (case number 10)
2. Irregularities of burned alar margins that cannot be corrected satisfactorily (cases number 1, 4 and 11).
3. Multiple operations in severe cases (cases number 8 and 10)
4. Reduced pliability, restricting the covering skin to take the form of the modified osteocartilagenous skeleton.

## Reference

- [1] Hafezi F, Pegahmeh M, Nouhi A. Single-stage aesthetic restoration of severely disfigured nose in burn injuries. *Burns* 2002;28(5):512–8.

- [2] Bernard SL. Reconstruction of the burned nose and ear. *Clin Plast Surg* 2000;27(1):97–112.
- [3] Rose GK, Mason JD, Varma SK. Effect of facial burns on the nasal mucosa. *Burns* 1996;22(8):631–2.
- [4] Bichet JC, Chekaroua K, Alshreibati F, Jacquin F, Foyatier JL. Rhinoplasty in the immediate assumption of responsibility of nasal burns. Technical note and report of two cases. *Ann Chir Plast Esthet* 2002;47(6):641–6.
- [5] Petrovici V, Makropoulos P. Reconstructive measures in burn injuries of the face and neck. *Handchir Mikrochir Plast Chir* 1986;18(1):11–5.